UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 3, 2019

Mr. Peter Bennett, CHG
Haley & Aldrich
1956 Webster Street, Suite 450
Oakland, CA 94612

Re: EPA Comments on Combined Groundwater Monitoring and Performance Evaluation Report, First Semi-Annual 2018
EPA Comments on Monitored Natural Attenuation Technical Memorandum, September 2018
Cooper Drum Cooperating Parties Group
Cooper Drum Company Superfund Site

Dear Mr. Bennett,

The Environmental Protection Agency (EPA), with support from Gilbane Company, contractor to the EPA, has reviewed the *Combined Groundwater Monitoring and Performance Evaluation Report, First Semi-Annual 2018*, dated August 31, 2018, as well as the *Monitored Natural Attenuation Technical Memorandum,* dated September 17, 2018. Haley & Aldrich, Inc, prepared these documents on behalf of the Cooper Drum Cooperating Parties Group. EPA has the following comments.

EPA Comments on the Combined Groundwater Monitoring and Performance Evaluation Report, First Semi-Annual 2018

1) **Section 5.4.3.4, Exposition Aquifer Monitoring Wells, page 20**. The report noted that laboratory analyses detected COCs (cis-1,2-DCE, vinyl chloride, and 1,2-DCA) above cleanup levels, and increasing in wells MW55 and MW16. The report states that the source for the COC detections in the Exposition Aquifer has not been determined. At the time of the ROD (2002), concentrations of COCs in the Exposition aquifer were non-detect in the downgradient area of the Cooper Drum plume. However, based on ongoing monitoring of the Exposition aquifer and the hydraulic conditions between the overlying Gaspur and Exposition aquifer (i.e., downward vertical gradient) EPA is concerned that the source of these COCs in the Exposition Aquifer may be from the Cooper Drum site. The concentration trends in other wells (MW18 and MW32) monitoring the Exposition Aquifer have also shown increasing COC trends (see Appendix I in the subject report) and are of further concern.

Table 9 from the Report shows groundwater analytical results from five monitoring wells (MW25B, MW28, MW30, MW37, MW40) completed in the Lower Gaspur Aquifer in the Phase 2 area, one monitoring well (MW62B) slightly upgradient in the Lower Gaspur Aquifer in the Phase 1 area, and a monitoring well (MW55) completed in the Exposition Aquifer in the downgradient portion of the Phase 2 Area.

Given that MW55 is downgradient and cross-gradient of these wells (MW25B, MW28, MW30, MW37, MW40), constructed approximately 15 feet below the depth of the lower Gaspur Aquifer, and there is a downward hydraulic gradient between the aquifer zones, the COCs in MW55 may very well be from the Cooper Drum Site. An increasing trend of COCs since installation of MW55 further supports this conclusion. Additionally, the suite of compounds detected in the monitoring wells (MW25B, MW28, MW30, MW37, MW40) completed in the lower Gaspur Aquifer are very similar to the compounds detected in MW55. EPA has observed a very similar migration pattern to the east of the Cooper Drum plume beginning at the Jervis Webb site, where COCs have migrated laterally (slightly south east) and vertically into the Exposition aquifer beneath the ELG Metals property.

Please address EPA's concern that the COCs from the Cooper Drum source area have vertically migrated into the Exposition Aquifer in the area near MW55 and provide any evidence that leads you to believe the contamination in the Exposition Aquifer is definitively *not* associated with the Cooper Drum source.

2) **Section 6.2, COC Concentration Trends and Mass Removal, second bullet, page 24.** Please use a logarithmic scale on Figure 21 to provide an easier evaluation to see if the mass removal rate is truly asymptotic.

3) **Section 6.2 Recommendation for OU2, last sentence, page 24.** EPA recommends using the EPA default soil gas screening levels to evaluate rebound testing. In addition, as part of rebound testing the CDCPG should estimate/calculate the time period any rebound may occur in an effort to determine what the monitoring period may be. This would ensure that the CDCPG does not miss the actual rebound period. EPA and CDCPG will address these issues further in a separate technical meeting.

4) **Appendix A, Table A-1, Response to EPA Comments, EPA General Comment.** EPA is concerned that mass removal has become diffusion-limited and the SVE system will remove available COC mass from more advective zones as the COCs diffuse to them from less permeable zones. The SVE system would still remove mass but at a much lower rate since the residual COC mass is likely contained within the lower permeable zones and limited by concentration gradients to the higher permeable zones where the SVE system can remove them. Thus, the statement that, "decreases in soil gas concentrations at the vapor probes are not anticipated with further SVE operation" is not accurate. EPA and the CDCPG will address this concern further in a separate technical meeting.

5) **Section 4.4, Summary of Analytical Data Quality Review.** As requested in previous comments, please state as a conclusion whether CDCPG rejected data or not during the data quality review.

6) **Table 15, Validation Summary.** Please check the column headings. The column headings for "Number of Results" and "% of Samples" appear incompatible for the tabulated values. Since the "Number of Results" is what is being reported, then all instances of "% of Samples" in the headings should be changed to "% of Results".

EPA Comments on the Monitored Natural Attenuation Technical Memorandum, Sept 2018

EPA is concerned about several issues related to the implementation of Monitored Natural Attenuation (MNA) as a remedial alternative for the downgradient portion of the plume (Phase 2 Remedial Action Area [RAA]).

Increasing COC concentrations at MW55

Overall, the report provided evidence in support of an MNA remedy for the Phase 2 RAA for the Gaspur Aquifer. However, concentrations of vinyl chloride have increased in MW55 in the Exposition Aquifer, which is within the geographic area of the MNA evaluation. CisDCE concentrations have also increased in other Exposition Aquifer wells that were not included within the MNA evaluation study area, as shown in the 2018 monitoring data. To demonstrate that MNA is a feasible and effective alternative to the active treatment techniques specified in the ROD, the MNA evaluation must address the vertical distribution of contamination in the Cooper Drum plume, including the question of whether contamination is migrating to lower aquifers.

EPA understands that the Consent Decree did not address remediation of all groundwater aquifers. However, the groundwater remedy specified in the ROD includes containment of the downgradient Cooper Drum plume. For EPA to approve of MNA in the downgradient portion of the plume, the CDCPG would need to be able to show that the Cooper Drum groundwater plume is currently contained both vertically and laterally.[1] This approach is consistent with EPA guidelines for evaluating MNA at groundwater sites. EPA's guidance document, entitled *Use of Monitored Natural Attenuation at Superfund, RCRA, Corrective Action and Underground Storage Tank Sites,*[2] specifically states that "all monitoring programs should be designed to accomplish the following: . . . Verify that the plume(s) is not expanding (either downgradient, laterally or vertically)."

Decreasing or stable concentrations of COCs at wells within the MNA study area can be evidence of effective containment. Presently, concentration trends in Exposition Aquifer well MW55 are increasing, however, and are above the MCL. Two other wells (MW16 and MW18) in the Exposition Aquifer show increasing trends (but are below the MCL currently). Further analysis and explanation is needed to explain these trends and whether they affect the feasibility or effectiveness of MNA as a remedial alternative for groundwater in the Phase 2 RAA.

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[1] The ROD-selected remedy for groundwater provides the that "Containment will be provided at the downgradient extent of contamination……Monitored natural attenuation could be employed if it can be demonstrated that contaminant concentrations in the groundwater plume have stabilized at reduced concentrations."

[2] The Consent Decree Statement of Work states that MNA monitoring shall be consistent with the guidelines in the guidance document *USEPA Use of Monitored Natural Attenuation at Superfund, RCRA, Corrective Action and Underground Storage Tank sites*, EPA/600R-98/128, April 1999. , and *A Guideline for Assessing Biodegradation and Source Identification of Organic Ground Water Contaminants using Compound Specific Isotope Analysis (CSIA)*, EPA 600/R-08/148, December 2008."

EPA requests results and trend analyses of ongoing monitoring wells completed in both the Gaspur and Exposition Aquifers to gain a better understanding of the downgradient portion of the plume. Characterizing the vertical extent of COCs in the Gaspur Aquifer (including whether COCs are migrating to the Exposition Aquifer) and an evaluation of MNA parameters in the Exposition Aquifer will greatly assist EPA in determining if MNA is appropriate and effective at containing contamination vertically in the Gaspur Aquifer in the Phase 2 Remedial Action Area. Please propose a path forward for evaluating vertical migration and increasing COC concentration trends in the Exposition Aquifer.

Metrics for MNA Remedy

If EPA determines MNA is feasible and effective, the CDCPG would need to delineate the specifics of a proposed MNA remedy. Specifics include addressing the anticipated duration of the MNA remedy, analyses and evaluations needed during the remedy, identification of which wells would be included in the remedy, and criteria for wells being included, among other issues.

Given that achievement of cleanup goals through MNA, especially for cis-1,2-DCE, could take a number of years, the report should explain how progress toward cleanup goals would be measured should EPA agree that MNA is a feasible and effective cleanup alternative. In addition, the report should explain contingency measures that would be followed should the EPA approve an MNA alternative, and the Phase 2 RAA fail to make progress toward cleanup goals in a timeframe proposed in the report. These contingency measures would need to be included in any ROD amendment adopting an MNA alternative. This contingency plan should specifically explain actions to be taken for the hypothetical scenario in which one or more of the wells in the Phase 2 Remedial Action Area exhibit statistically increasing trends. Contingency provisions could include a return to the ROD selected remedy (e.g., enhance reductive dechlorinating [ERD]) or other actions designed to address groundwater contamination in the Phase 2 RAA.

Specific Comments

1) **Executive Summary, 2nd paragraph and Section 1.3.5**. The executive summary states that remedial action in the Phase 2 Remedial Action Area may increase VI risk. However, with the shallow Gaspur Aquifer at ~55 ft bgs and the low concentrations (nondetect to <MCLs), it is not clear why VI would be of concern. Please explain this further.

2) **Section 1.4.1.2 2nd bullet**. Wells MW53 and MW54 are completed in the Lower Gaspur Aquifer and concentrations of cDCE and 1,4-dioxane in these two wells is elevated. These compounds are likely related to the Cooper Drum Plume. As such, these wells should be included in an MNA monitoring plan.

3) **Section 1.4.2; penultimate bullet**. This bullet suggests that low concentrations of 1,4-dioxane and/or 1,2-DCA concentrations in the Phase 2 Remedial Action Area are

similar to upgradient areas. This conclusion should be more specific and supported with analytical data. 1,4-dioxane is clearly from the Cooper Drum source area as shown by the highest concentrations in Cooper Drum wells MW21 (up to 450 ug/L) and MW33A (up to 300 ug/L). These wells are on the Cooper Drum property and completed in the shallow Gaspur Aquifer.

4) **Section 1.4.3; 1st paragraph, last sentence**. Please note that the State Water Board considers all CA groundwater as beneficial; therefore, this argument (i.e., There is no beneficial use of the shallow groundwater and concentrations of arsenic and sulfate are well above the Cal EPA MCLs in the shallow aquifer), while logical, may not be acceptable from a State regulatory point of view.

5) **Section 1.4.3; 2nd paragraph, last sentence**. While this argument (i.e., dilution of sulfate concentration in the shallow aquifer, from above Cal EPA MCLs to below MCLs, during vertical migration to deeper water supply wells) may be generally true, it must also be noted that solvents (especially DNAPL) migration mechanisms could be very different than sulfate and other inorganics.

6) **Section 2.1.1; 1st sentence after TCE reductive dechlorination equation**. Start this sentence with, "With the exception of PCE."

7) **Section 2.3.1; 1st paragraph and table**. Please add the specific analysis (M-K, linear regression, or T-S) used to evaluate the specific trend listed. Also, please explain how a "stable" trend was identified, and how that is different from "No trend" (i.e. not enough samples). Is "no obvious trend" considered "stable"?

If you have any questions concerning these comments, please contact me at (415) 972-3219, or jurist.karen@epa.gov.

Sincerely,

Karen Jurist
Project Manager, Superfund Division

cc:
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